

Uncertainties in the transition to a sustainable energy infrastructure

Joris Knigge

Asset Management | Innovation

Structure

- ▶ Enexis
- ▶ Issues
- ▶ Challenges

Enexis

- ▶ Former network company of Essent
- ▶ Since January 1st 2009



General

- Ca. 3.500 employees
- Turnover ca. € 1.7 billion annual (E+G)

Annual Transport volumes

- 32.350 GWh
- 5.600 billion m³



Electricity

- 2.4 million connections
- ca. 45.000 km MV cables
- ca. 98.000 km LV cables
 - MS 3 t / m 20 kV
 - LS 230 / 400 V
- 50.000 stations
- 26 min. Avg. annual outage duration



Gas

- 1.8 million connections
- 40.000 km pipelines
 - high pressure 1/4/8 bar
 - low pressure 30/100 mbar
- 24.000 stations
- Avg. annual outage duration < 1 minute/customer/year

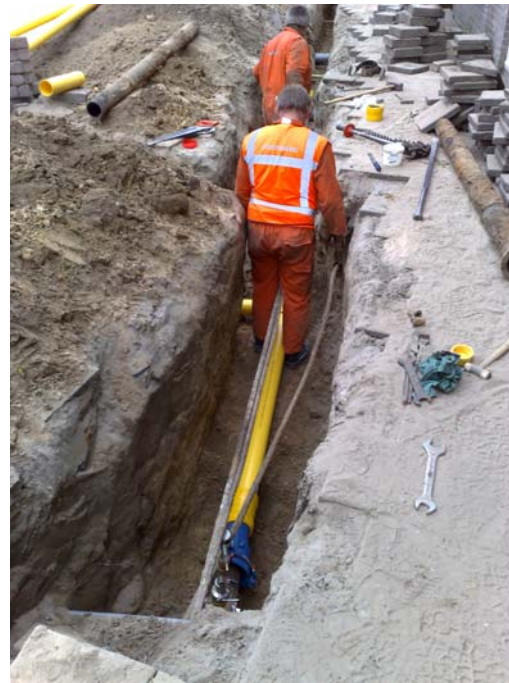
Enexis

- ▶ Design, construct and maintenance of gas and electricity distribution networks



Enexis

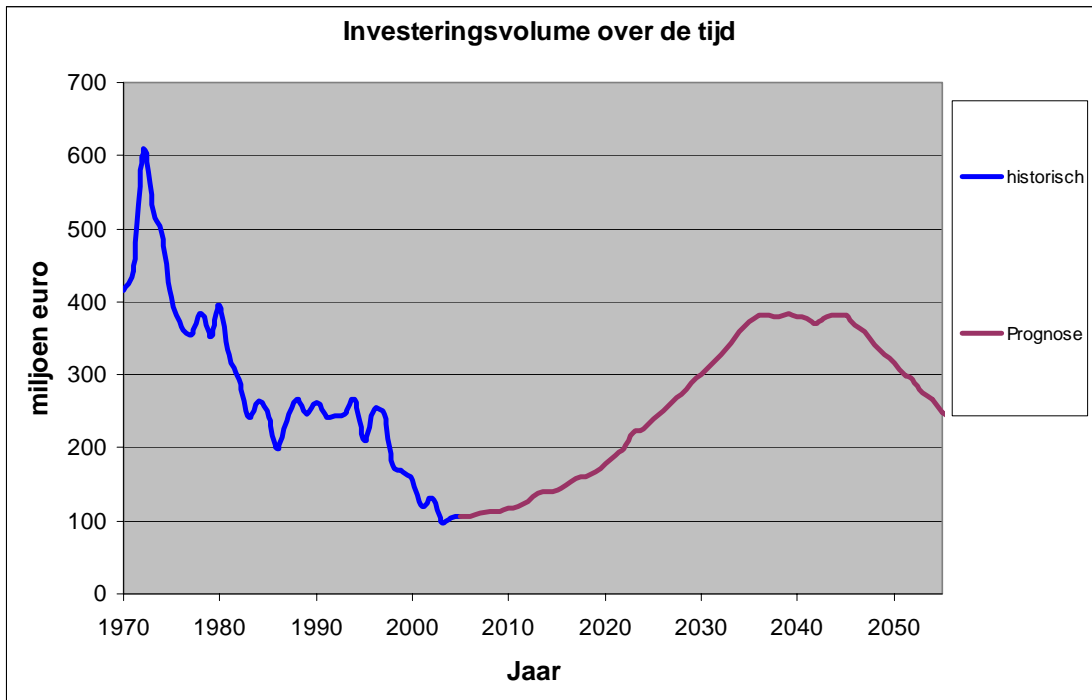
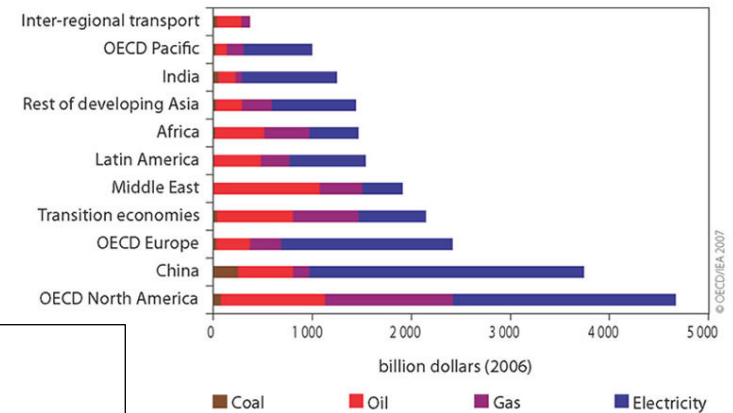
- ▶ Design, construct and maintenance of gas and electricity distribution networks



Issues

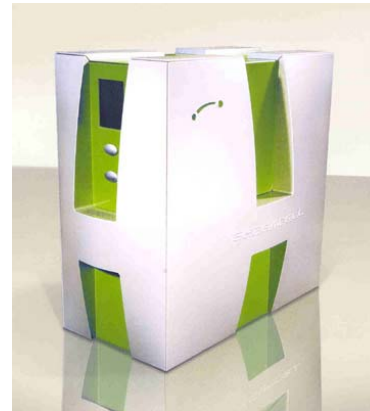
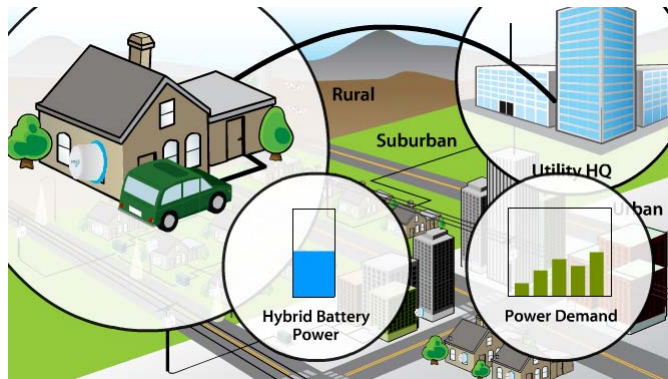
- ▶ Ageing of components and installations
- ▶ Renovation and replacement

Cumulative Investment in Energy Infrastructure in the Reference Scenario, 2006-2030



Issues

- ▶ Electrification of society
 - (heat-pumps, PHEV's, batteries, combined heat and power systems)
- ▶ Technological innovations

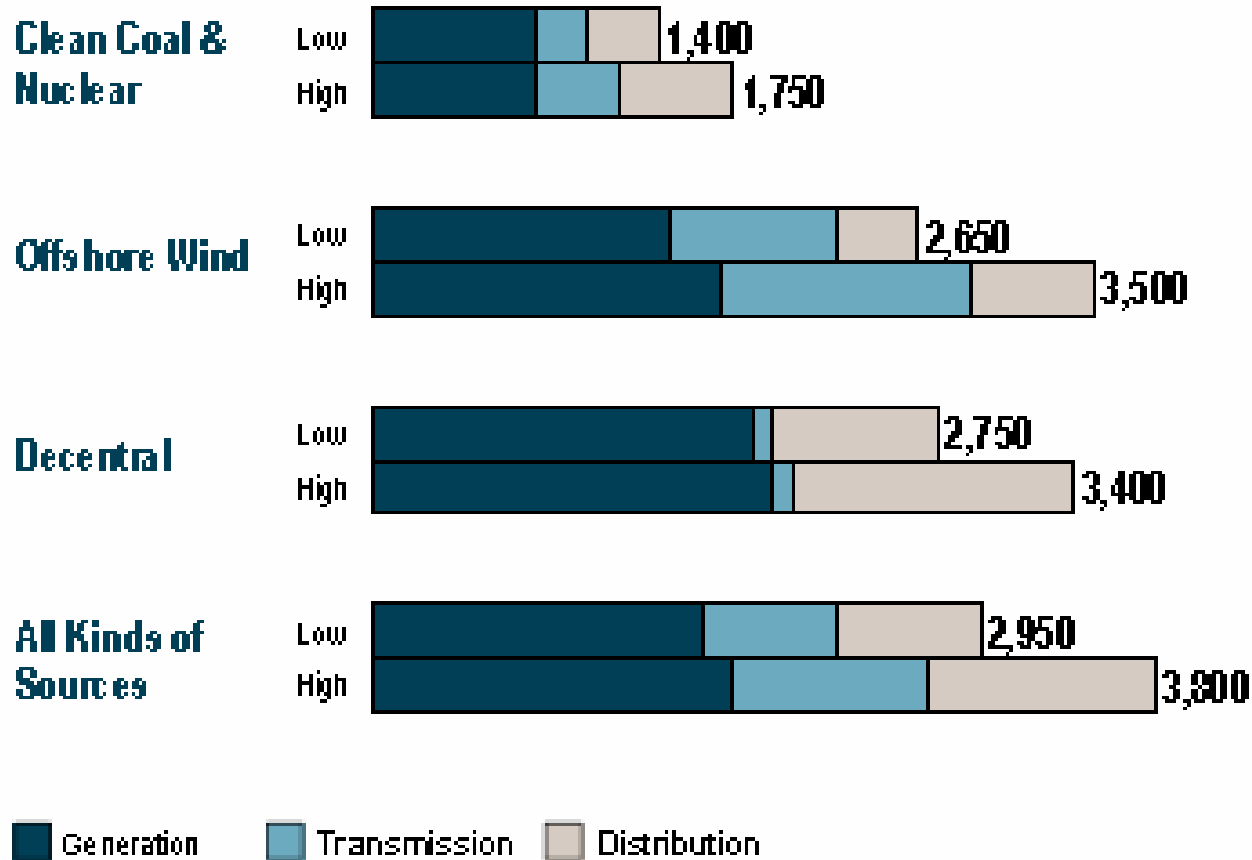


Challenges

- ▶ Distribution network is link in value chain between demand and supply
- ▶ Path of sustainable energy transition and outcomes are uncertain
- ▶ Large Investments for ageing network components and installations
- ▶ Large societal costs
Roland Berger (2008) *Secure and Green energy, but at what cost? A holistic view on investment alternatives for European electricity supply*, Amsterdam

Challenges

Total investment by scenario [EUR bn]



Challenges

- ▶ Solutions and directions are needed
- ▶ Need for enhancement of insights and research
- ▶ Roles and responsibilities

- Thank you for your attention -

